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### GEO 101N.02: Introduction to Physical Geology

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# Introduction to Physical Geology (GEO 101N, Sect. 02, 3 Credits) Spring 2015

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**Instructor:** Dr. James Sears  
**email:** [james.sears@umontana.edu](mailto:james.sears@umontana.edu)

**Office:** CHCB 362  
**Phone:** 243-4720

**Class Meetings:** MWF from 2:10 PM - 3:00 PM, CHCB 131

**Office Hours: Monday and Wednesday; 3:00-4:00 PM or by appointment.** *It is impossible to schedule office hours that are convenient for every student! Please do not hesitate to contact me to arrange to meet at another time.*

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**Course Description:** *This course is an introduction to geosciences; the study of how Earth works. Humans around the world are impacted every day by interaction with our planet, including geologic hazards and access to natural resources. This course will help you to develop your understanding of both the physical processes that have gone into making the Earth what it is today, and an awareness of how Montana fits into the global picture. This knowledge will help you make intelligent decisions about issues that affect humankind.*

**Course Objectives:** *After completing this course, you will be able to:*

- describe, analyze, and assess the geologic features, events, and processes that impact your daily life
- use evidence (e.g., from graphs, rocks, maps, etc.) to support an interpretation or explain a concept
- understand the general principles associated with the discipline of geosciences including:
  - 1) Geoscientists use repeatable observations and testable ideas to explain and understand our planet
  - 2) Earth is 4.6 billion years old and has a complex and varied history
  - 3) Earth is a complex system of interacting rock, water, air, and life
  - 4) Earth is continuously changing, primarily due to active plate tectonics and erosion
  - 5) Humans depend on Earth for resources that are formed by geologic processes
  - 6) Natural hazards pose risks to humans and must be understood in order to minimize and mitigate risks
  - 7) Geologic processes have impacted the development of human civilization and the actions of humans can significantly impact the Earth

## **Required materials:**

- 1) **Essentials of Geology (4<sup>th</sup> Edition), Steven Marshak (ISBN: 978-0-393-91939-4), including access to Norton Smartwork (see below for details).**
- 2) **Clicker remote (classroom response system), simple version OK (ISBN: 0716779390).**

**Textbook:** *Both the textbook and access to the Norton Smartwork website are essential for this course. There is an ebook option (see [www.norton.com](http://www.norton.com)). Access to the Norton Smartwork website access is included with a new text and some used text (if access card has not been previously used), or can be purchased separately online at [www.norton.com](http://www.norton.com) for a small fee. For registration info, see [Online Assignments](#) below.*

*New textbooks at the bookstore have a free Geotours workbook packaged with them. The workbook is optional – duplicate information can be accessed online. So if you have purchased a textbook without the workbook, you will still have the info you need. If you would like a copy of the paper workbook, they can be purchased separately from the textbook.*

*A copy of Essentials of Geology is on reserve at Mansfield Library. It is most effective for your learning to read chapters of the text prior to the class in which they will be discussed.*

**Moodle:** *Access the Moodle course supplement by going to UOnline from the UM homepage. Logon with your netID. If you are enrolled in the course, you will see GEO101 listed when you enter Moodle. For Tech Support, call the UOnline Techs at 406.243.4999 or 866.225.1641 (toll-free) or email them at [umonline-help@umontana.edu](mailto:umonline-help@umontana.edu). They are available from 8 AM to 5 PM, Monday through Friday.*

**Online Assignments (Smartwork and Geotours):** *Online Assignments need to be completed on Smartwork (follow link on Moodle). A two-week free trial is available, so if you need more time to purchase your book/access or if you are not sure you will stay in the course, you should start by signing up for the free trial.*

To access the online assignments, create a SmartWork account and self-enroll into our class following the "First Time User" instructions at <http://smartwork.wwnorton.com>. Please enter your name **as it appears in the university directory (no nicknames, please!)** and your UM email address!

**The enrollment key for our course is ESSGEO4E7943**

You will have three attempts with no time limit to correctly answer each of the questions in the Smartwork assignments. Your grade will be visible immediately in the Smartwork gradebook. I will transfer these periodically to the Moodle gradebook.

Google Earth Geotour assignments should also be submitted via the Smartwork website. If you do not have a paper text, this is where you will find the instructions and text of Geotour questions. There is no time limit for geotours – you will have three attempts at each question.

Additional geotours will be offered for optional extra credit.

**Due dates for all online assignments are listed on the attached schedule.**

**Please note that the Norton website has its own technical support staff.** They are available for extended hours including evening and weekend hours, by online chat or by email. The online chat option should appear as soon as you have submitted the online help request form. Please do not email me for technical support or help with your Smartwork account access. Please do let me know if you think your responses have been scored incorrectly or have a question about the accuracy of an exercise, or if you have trouble getting the assistance you need.

**iclicker:** The iclicker will be used at every class period. The purpose of the iclicker is to give the instructor feedback on student understanding as well as to monitor participation. It must be the iclicker brand to work with my software. We cannot use the iclickergo (web version) for this course because the wireless support in our classroom is not sufficient. Course credit for clicker use in class will begin **Wednesday, February 4th**. Note that final calculation of your iclicker total at the end of the term will drop your six lowest-scoring days.

Use your iclicker once in class. Then go to the website ([www.iclicker.com](http://www.iclicker.com)) and register it (open the MENU and click REGISTER YOUR REMOTE). **Use your NetID** when registering your clicker and enter **your name as it appears in the official university directory**.

**Note that using another student's clicker in class is considered academic dishonesty – this will result in both students receiving zero iclicker points for the semester and will be subject to academic penalty by the University.**

**Assessment:**            **Exams 1, 2, and 3 – 35% total, lowest of the three dropped**  
                                 **Final Exam (required) – 20%**  
                                 **Smartwork assignments – 15%**  
                                 **In-class assignments – 10%**  
                                 **iclicker response – 10%**  
                                 **Geotours – 10%**

**Final grade:** *This course must be taken for a traditional letter grade to meet the Natural Sciences General Education requirement. A minimum final grade of C- is required to meet a Gen Ed requirement.*

*The following scale may be adjusted at my discretion.*

A 93-100%	A- 90-92%	B+ 87-89%	B 83-86%	B- 80-82%
C+ 77-79%	C 73-76%	C- 70-72%	D+ 67-69%	D 63-66%
D- 60-62%	F 59 or below			

**Exams:** There will be three midterm exams and a final exam (which will include a comprehensive portion). Exams will include multiple choice and free-response questions, which may include drawing and labelling diagrams. All material covered during class meetings, in the text, and in other required assignments may appear on exams. Makeup exams will be allowed only for university-excused events and for extraordinary circumstances. If you need to request/discuss a makeup exam, it is required that you contact me in advance of

the exam date and as early as possible. The lowest of your three midterm grades will be dropped (this would include a score of zero given for a non-excused missed exam). **All students are required to take the final exam.**

**Extra Credit:** *Maximum extra credit that can be earned is 5% of course grade.*

*One option for extra credit will be a Saturday Field Trip (participation and short assignment) – Date TBA. Additional extra credit assignments will be offered via the Moodle site.*

**Communication:** *Please note that I will only use your official UM email. This is required to comply with FERPA (the Federal Educational Rights and Privacy Act). Email is the preferred way to contact me. **It is your responsibility to make sure you read messages sent to your UM email address in a timely manner.***

**Studying & Time Expectations:** *A standard benchmark for studying for a college science class is **2-3 hours of work outside of class for each hour in class**. This means that for our 3-hour class, you should plan to spend 6-9 hours per week outside of class on reading the textbook chapter, doing Smartwork and Geotour assignments and other forms of studying in ways that are most effective for you.*

**Students with Disabilities:** *Whenever possible, and in accordance with civil rights laws, the University of Montana will attempt to provide reasonable modifications to students with disabilities who request and require them. Please feel free to set up a time to meet with me to discuss any modifications that may be necessary for this course. For more information, visit the Disability Services for Students website at [www.umt.edu/dss/](http://www.umt.edu/dss/)*

**Academic Integrity:** *All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at [http://life.umt.edu/vpsa/student\\_conduct.php](http://life.umt.edu/vpsa/student_conduct.php)*

**Classroom courtesy:** *This will be a large class. Please be considerate of your classmates. Please do not engage in extraneous talking and other distracting behavior in the classroom. Use of cell phones, laptops, and other electronic devices for purposes other than participating in class is distracting and disrespectful and is not acceptable in the classroom.*

## GEO101-01 Spring, 2015 Course Schedule

<i><b>Date</b></i>	<i><b>Day</b></i>	<i><b>Chapter in <u>Essentials of Geology 4e</u></b></i>	<i><b>Assignments in addition to textbook reading...</b></i>
Jan. 26	M	Intro to Course. Prelude – And Just What is Geology?	
Jan. 28	W	Ch. 1- The Earth in Context	
Jan 30	F	Ch. 1- The Earth in Context	
Feb. 2	M	Ch. 2 The Way the Earth Works: Plate Tectonics	Ch. 1 Smartwork and Syllabus Quiz (Moodle) due 11AM Mon 2/2
Feb. 4	W	Ch. 2 The Way the Earth Works: Plate Tectonics	
Feb. 6	F	Ch. 2 The Way the Earth Works: Plate Tectonics	
Feb. 9	M	Ch. 2 The Way the Earth Works: Plate Tectonics	Ch. 2 Smartwork; also Geotour B, due 11AM, Mon 2/9
Feb. 11	W	Ch. 3. Patterns in Nature: Minerals	
Feb. 13	F	Ch. 3. Patterns in Nature: Minerals	
<b>Feb. 16</b>	<b>M</b>	<b>President's Day Holiday</b>	Ch. 3 Smartwork due Mon 2/16 <b>midnight</b>
Feb. 18	<b>W</b>	<b>EXAM #1 (covers Ch. 1, 2, and 3)</b>	
Feb. 20	F	Interlude A and Ch. 4. Up from the Inferno: Magma and Igneous Rocks	
Feb. 23	M	Ch. 4. Up from the Inferno: Magma and Igneous Rocks	Ch. 4 Smartwork due 11AM Mon 2/23
Feb. 25	W	Ch. 5. The Wrath of Vulcan: Volcanic Eruptions	
Feb. 27	F	Ch. 5. The Wrath of Vulcan: Volcanic Eruptions	
Mar. 2	M	Ch. 5. The Wrath of Vulcan: Volcanic Eruptions	Ch. 5 Smartwork due; also Geotour E, due 11AM Mon 3/2
Mar. 4	W	Interlude B (omit B3) and Ch. 6. Pages of Earth's Past: Sedimentary Rocks	
Mar. 6	F	Ch. 6. Pages of Earth's Past: Sedimentary Rocks	
Mar. 9	M	Ch. 7. Metamorphism: A Process of Change	
Mar. 11	<b>W</b>	<b>EXAM #2 (covers Ch. 4, 5, 6, 7)</b>	Ch. 6-7 Smartwork due 11AM <b>Wed 3/11</b>
Mar. 13	F	Ch. 10. Deep Time: How Old is Old?	
Mar. 16	M	Ch. 10. Deep Time: How Old is Old?	
Mar. 18	W	Ch. 10. Deep Time: How Old is Old?	Ch. 10 Smartwork due 11AM <b>Wed 3/18</b>
Mar. 20	F	Ch. 8. A Violent Pulse: Earthquakes	

<b>Date</b>	<b>Day</b>	<b>Chapter in <i>Essentials of Geology 4e</i></b>	<b>Assignments in addition to textbook reading...</b>
Mar. 23	M	Ch. 8. A Violent Pulse: Earthquakes	
Mar. 25	W	Ch. 8. A Violent Pulse: Earthquakes and Interlude D. Seeing Inside the Earth	Ch. 8 Smartwork also Geotour H, due 11AM <b>Wed 3/25</b>
Mar. 27	F	Ch. 9. Craggs, Cracks and Crumples: Crustal Deformation and Mountain Building	
<b>Mar. 30 - Apr. 3      <i>Spring Break – no classes</i></b>			
Apr. 6	M	Ch. 9. Craggs, Cracks and Crumples: Crustal Deformation and Mountain Building	Ch 9 Smartwork due 11AM Mon 4/6
Apr. 8	W	Ch. 12 Riches in Rock: Energy and Mineral Resources	
Apr. 10	F	Ch. 12 Riches in Rock: Energy and Mineral Resources	
Apr. 13	M	Ch. 12 Riches in Rock: Energy and Mineral Resources	Ch. 12 Smartwork also Geotour L, due 11AM Mon 4/13
Apr. 15	<b>W</b>	<b>EXAM #3 (covers Ch. 10, 8, 9, 12)</b>	
Apr. 17	F	Ch. 14. Running Water: The Geology of Streams and Floods	
Apr. 20	M	Ch. 14. Running Water: The Geology of Streams and Floods	
Apr. 22	W	Ch. 16. A Hidden Reserve: Groundwater	Ch. 14 Smartwork due 11AM <b>Wed 4/22</b>
Apr. 24	F	Ch. 16. A Hidden Reserve: Groundwater	
Apr. 27	M	Ch. 16. A Hidden Reserve: Groundwater	Ch. 16 Smartwork also Geotour N, due 11AM Mon, 4/27
Apr. 29	W	Ch. 18. Amazing Ice: Glaciers and Ice Ages	
May 1	F	Ch. 18. Amazing Ice: Glaciers and Ice Ages	
May 4	M	Ch. 19. Global Change in the Earth System	Ch. 18 Smartwork due 11AM Mon, 5/4
May 6	W	Ch. 19. Global Change in the Earth System	
May 8	F	<b>Review</b>	Geotour R due 11AM Mon 5/11
		<b>EXAM #4 (FINAL) - Ch. 14, 16, 18, 19 and cumulative portion; Monday, May 11, 3:20-5:00 PM</b>	

**The above schedule, policies, procedures, and assignments for this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better student learning.**